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Summer Crane Flies of Lake Itasca Vicinity, Minnesota¹

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ABSTRACT

Eighty species of Tipulidae and three of Ptychopteridae are recorded for a limited area near the forest-prairie border of north-central Minnesota. The collections were made during five weeks of June and July, 1970. Species new to the region include *Ctenophora apicata*, *Limnophila bryanti*, *Hexatoma cinerea*, *Ormosia megacera* and *Molophilus novacaesariensis*. Ecological, seasonal and geographical distribution of each species are summarized.

To this basic list are added 12 species of the Lake Itasca area from the collection of the University of Minnesota, of which *Limnophila similis* is a new regional record.

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which concerns mainly the genus *Nephrotoma*. Technical assistance by Mr. Chen-Wen Young is acknowledged with thanks.

INTRODUCTION

Following is a record of crane flies (Tipulidae) and phantom crane flies (Ptychopteridae) collected in the vicinity of Lake Itasca, Clearwater County, Minnesota, between 19 June and 20 July 1970. During this period, 22 collections were made on 19 different days and the major habitats were sampled repeatedly. This was not a concentrated field study, but was incidental to the teaching of a five-week course in general entomology. Nevertheless, the list of species is judged to be fairly representative of the early summer season. Addition of the species of spring and late summer should increase the known regional fauna of these flies considerably.

Lake Itasca, source of the Mississippi River, at 454 m (1475 ft) above sea level, is surrounded by a patchy intermingling of hardwood forest and coniferous forest. The hardwoods, entering the region from the southeast, include oaks, some maple, ash and others. The eastern coniferous forest includes jack pine, red pine and white pine, largely characteristic of areas to the east, and some balsam fir and spruce more representative of the subarctic forests. Paper-bark birch is scattered through both these forest types. Wide expanses of aspen cover areas once deforested by logging operations or burning. Annual precipitation in the region is only about 57 cm (23 inches), but water is abundantly evident in virtually all habitats. Lakes and ponds are numerous and are fed by and often interconnected by slowly moving streams. Intervening land includes wooded swamps, acidic *Sphagnum* bogs and marshy meadows. Black spruce and tamarack occur in boggy environments, and alder and willow shrubs are common along the streams. Open marshy areas, often adjoining the many small lakes in the region, are characterized by the presence of sedges and grasses. Forest undergrowth comprises a profusion of herbaceous plant species, mosses, ferns and lycopods.

Although the forest is more or less continuous eastward to the Atlantic Ocean, southeastward to the Gulf of Mexico, and

northward to Hudson Bay, it ends almost abruptly about 65 km (40 mi) west of Lake Itasca, giving way to open prairie on the bed of Pleistocene Lake Agassiz. Many of the forest crane flies found here are, accordingly, near the westernmost edge of their range; some others, truly boreal, range on to the northwestward in the subarctic forest, north of the plains.

The collections include about equal numbers of species of the subfamilies Tipulinae (39 species in 4 genera, 22 of these in the large genus *Tipula*) and Limoniinae (40 species in 16 genera) and a single species in the Cylandrotominae, as well as three species of Ptychopteridae. Many of these are boreal species that range broadly across Canada and southward in and near the Appalachian Mountains. Virtually all are species with extensive ranges in eastern North America, especially in northeastern United States and southeastern Canada. A few are reported from the region for the first time, having been recorded earlier from no further west than Michigan (Rogers, 1942) or even farther to the east.

Dickinson's "The Crane Flies of Wisconsin" (1932) is the only extensive faunal study of Tipulidae made anywhere near the Lake Itasca region. It lists 130 species and one subspecies of tipulids and one ptychopterid. It should be useful in giving some idea of the species to be expected in the Lake Itasca area but not found by me in this study. Rogers (1942) found 201 species of crane flies and two of Ptychopteridae in an area of southeastern Michigan that is in many ways ecologically similar to the Lake Itasca region. Nearly 400 species are known from the entire state of Michigan (my unpublished list); the number in Wisconsin and Minnesota is surely near 300.

Since this list of 95 species is clearly incomplete for the region, I have omitted taxonomic keys, illustrations and other aids to identification. Taxonomic keys and illustrations may be found in Alexander's (1942) paper on the Tipulidae of Connecticut (in which the keys cover the fauna of temperate and boreal eastern North America) and in Dickinson's paper.

Species are recorded in the sequence in which they appear in the Catalog of the Diptera of America North of Mexico (Stone et al., 1965). In most instances the names are those given in the Catalog; some sub-generic assignments in *Tipula* have been changed to conform to more recently published taxonomic views, and occasionally the catalogued subspecies are rejected for the reasons stated in my comments.

Following the name of each species and that of its author is a subjective estimate of its abundance in the Lake Itasca area from 19 June to 20 July 1970:

rare—only one individual collected, or only a few all at one place and on one date,

uncommon—a few specimens taken, at two or three different places or dates,

occasional—several specimens taken, but at only 2-4 places or on widely scattered dates,

numerous—species present in such numbers that, in favorable habitats, 10-20 individuals could be collected in an hour,

common—present in most habitats and in such numbers that in the more favorable places 20-50 individuals could be netted in an hour of collecting,

abundant—of such numbers that in the more favorable habitats 50 or more specimens could be collected in an hour, and usually present in most habitats.

Seasonal occurrence is indicated by actual dates of collection or spans of dates.

Previously recorded range (abbreviated PR) is indicated by naming the northeasternmost state or province in which the species has been found, then the northwesternmost, followed by names of states indicating the southern boundary of the range, generally from west to east. State and provincial names are usually abbreviated.

ANNOTATED LIST OF SPECIES

TIPULIDAE

Ctenophora (Ctenophora) apicata Osten Sacken. Rare; one female of the dark-winged form found resting on a slightly decayed aspen log (a likely larval habitat) in mixed forest near a swamp, on 4 July. One female, somewhat less

melanic, from Ponemah Point, Red Lake, Beltrami Co., 3 July. PR—N.Y., New England and s.e. Canada, 1600 km (1000 mi) or more to the east; these specimens thus constitute a new regional record.

Ctenophora (Tanyptera) dorsalis Walker. See appendix.

Nephrotoma alterna (Walker). Occasional in dense, low herbaceous vegetation at forest borders. 24 June, 3 and 14 July. Recorded as *N. incurva* Loew in older literature. Typical form reported earlier from N.S. w. to Mich. and s. to Fla.; subspecies *nexilis* Dietz recorded from Colo., Man., Minn. and Wis. The Lake Itasca specimens are somewhat paler overall than those from more eastern and southern localities but do not have the color markings used by Dietz to differentiate *nexilis*.

Nephrotoma breviorcornis (Doane). Rare; one male and one female taken in low streamside vegetation, 15 July. PR—Que. w. to Wis., s. to Iowa and S.C.

Nephrotoma ferruginea (Fabricius). Occasional, especially in open, grassy areas near buildings but also in upland woods; larvae usually in sod. 27 June-5 July. Species widespread in eastern North America and Rocky Mountain region; PR—Nfld. w. to Alta., s. to Colo., N. Mex. and Ga.

Nephrotoma gracilicornis (Loew). Rare or uncommon in low vegetation near swamp and lake margins. 3 and 13 July. A subspecies *temeraria* (Dietz) has been recorded from northern Michigan and Wisconsin, but I consider this a synonym of the typical form. PR—N.Y. and Ont. w. to Wis., s. to Pa. and Md.

Nephrotoma lugens (Loew). Uncommon; in shaded tall grasses along lake shore. 20-25 June. PR—N.S. w. to Minn., s. to Ill. and N.C.

Nephrotoma macrocera (Say). Occasional in dense herb-shrub vegetation at edge of swamp. Only females were collected. 27 June-19 July. PR—Maine w. to Wis., s. to Kans., Tenn. and Fla.

Nephrotoma occipitalis (Loew). Uncommon; from dense growth at swamp margin to

- drier woods of birch and aspen with ground cover of grasses and broad-leaved herbs. 20-27 June. PR—a boreal species from northern Canada, N.B. n.w. to N.W.T., s. to Colo. and Mich.
- Nephrotoma sodalis* (Loew). Uncommon in grassy areas of the park. 17 June and 2 July. PR—Que. to Wis., s. to N.C.
- Nephrotoma tenuis* (Loew). Uncommonly taken in herbaceous vegetation, both along swamp margins and in upland woods. 13-19 July. PR—Maine w. to Wis., s. to Tenn. and N.C.
- Dolichocheza (Dolichocheza) americana* Needham. Uncommon; taken in deeply shaded niche below a boulder projecting from a bank at trailside, together with *D. obscura* and *D. tridenticulata*. 24-27 June. PR—widespread from Labr. n.w. to Alaska, s. to Alta., S.D., Ill. and n. Ga.
- Dolichocheza (Oropeza) dorsalis* (Johnson). Fairly common in herbaceous vegetation in open swampy woods and along margins of swamps. 4-15 July. PR—N.S. w. to n. B.C., s. to S.D., N.C. and n. Fla. Variation in length of the petiole (vein M_{1+2} beyond m) of cell M_1 is common locally, from distinctly petiolate (more than half as long as vein M_1) to obliterated, with cell M_1 sessile on cell 1st M_2 (cf. Byers 1961:809-810).
- Dolichocheza (Oropeza) obscura* (Johnson). Numerous; taken from time to time in low vegetation at swamp margin, but more often found resting in a group in deep shade below an outcropping boulder at trailside, together with *D. americana* and *D. tridenticulata*. 1-19 July. PR—N.S. w. to Alta., s. to Ark. and Fla.
- Dolichocheza (Oropeza) similis* (Johnson). Occasionally taken from shaded cranny beneath fallen log about 30 m from swamp but more often around upturned roots of fallen trees in swamp, or in shade of dense vegetation over muddy spots or low, mossy hummocks in swamp. 24 June-1 July. PR—Maine w. to Man., s. to s. Mich. and w. Md.
- Dolichocheza (Oropeza) tridenticulata* Alexander. Uncommonly collected, but in concentrations of several flies; all specimens taken from shaded niche below boulder projecting from a bank. See *D. obscura*. 27 June-4 July. PR—Maine, Que. w. to Man., s. to Mo. and Ga.
- Dolichocheza (Oropeza) venosa* (Johnson). Uncommon; taken together with *D. similis* in shade of upturned roots of fallen trees in swamp, or elsewhere in deeply shaded parts of swamp and nearby woods. 24 June-1 July. PR—Nfld. w. to Yukon, s. to Wis., Ohio and N.J.
- Dolichocheza (Oropeza) walleyi* (Alexander). Occasional; generally distributed in low herbaceous stratum of woods, both near swampy areas and in upland woods, but never commonly collected. 27 June-15 July. PR—N.S. w. to Alta., s. to S.D., Mo. and Fla.
- Tipula (Schummelia) hermannia* Alexander. Occasional in shaded, low vegetation of streamside and swamp border habitats. 30 June-13 July. PR—Nfld. w. to Wis., s. to Kans. and Fla.
- Tipula (Nippotipula) abdominalis* (Say). Several larvae collected from shallow, detritus-filled concavities at shore of Mississippi River near its source, on 30 June. PR—Nfld. w. to Wis., s. to Kans. and n. Fla.
- Tipula (Yamatotipula) caloptera* Loew. Uncommon in grasses 20-70 cm high in shade of alder shrubs and birch and aspen trees along the Mississippi River near its source at the north end of Lake Itasca. In wing coloration, these flies resemble *T. (Y.) noveboracensis* Alexander, and the median lobe of the ninth abdominal tergum of the males is not an evenly rounded and blackened structure (as in typical *caloptera*) but a broad, almost truncated lobe with a small median point. 16-20 July. PR—Nfld. w. to Wis., s. to Mo. and Fla.
- Tipula (Yamatotipula) sulphurea* Doane. Rare; only one female taken in deep shade of luxuriant herbaceous foliage in a wooded swamp, together with *Dolichocheza similis*. 1 July. PR—Maine w. to Mich. (but an apparently isolated subspecies recorded from Wyoming), s. to Ind.

- Tipula (Yamatotipula) tephrocephala* Loew. Occasional; among ferns, *Carex* and broad-leaved herbs at the margin of a swamp, also in similar habitat by the lake shore. 20 June-1 July. PR—Nfld. w. to Wis., s. to Ind. and Pa.
- Tipula (Yamatotipula) tricolor* Fabricius. Occasionally found in grass-sedge habitats, often in only partial shade, both at the headwaters of the Mississippi River (north end of Lake Itasca) and in a low swale beside Mary Lake (south of the east arm of Lake Itasca). A preponderance of males during the few days the species was seen suggests a single mid-summer generation. 10 and 16-20 July. PR—Maine and Que. w. to Wis., s. to Ark. and Fla.
- Tipula (Yamatotipula) vicina* Dietz. Rare; a single male taken among sedges beneath willow and alder shrubs along the Mississippi River about 9 km north of its source. 30 June. PR—Nfld. w. to Mich., s. to Pa.
- Tipula (Angarotipula) illustris* Doane. Uncommonly collected, but locally numerous in low, leafy vegetation of swamps or in grassy marshes and swales. 10-19 July. Recorded as *Prionocera* (or *Stygeropis*) *fuscipennis* Loew in older literature. PR—Nfld. w. to B.C., s. to Idaho, Colo., Ohio and N.J.
- Tipula (Vestiplex) canadensis* Loew. Rare; one male taken in low, leafy plants on hillside above swamp. 27 June. PR—Labr. n.w. to N.W.T., s. to Alta. and Ont.
- Tipula (Pterelachisus) angulata* Loew. Common in low herbaceous stratum of upland woods, also in lower swales among orchids, wild ginger, *Equisetum*, etc.; uncommon in vegetation at swamp border. 19 June-13 July. In several males, the tip of vein R_{1+2} is atrophied (and in one specimen it is absent in one wing, present in the other), cell 1st M_2 is about as long as cell M_1 , and the median "tooth" in the notch of the ninth abdominal tergum is indistinct or lacking. Thus, these males would run to *Tipula subsfasciata* Loew in existing keys. If the two nominal species prove to be synonymous, *subsfasciata* is the older name. PR—N.S. w. to Wis., s. to Ill., Tenn. and N.C.
- Tipula (Pterelachisus) entomophthorae* Alexander. Rare; only one female taken in partially shaded ferns, grasses and sedges at headwaters of Mississippi River, north end of Lake Itasca, on 16 July. PR—Labr. and Nfld. w. to Alta., s. to Ind. and N.C.
- Tipula (Pterelachisus) illinoiensis* Alexander. Rare; one female found among bracken ferns, *Equisetum* and herbaceous plants in woods near swamp margin. 20 June. PR—N.H. w. to Man., s. to Ill.
- Tipula (Pterelachisus) penobscot* Alexander. Rare; only one female taken among ferns and *Equisetum* at the edge of a swamp, on 1 July. PR—N.B. w. to Alta., s. to Mich. and Pa.
- Tipula (Pterelachisus) senega* Alexander. Uncommon; in low, leafy vegetation on wooded hillside above swamp (forest about 60% spruce and pine, 40% aspen and birch). 24-27 June. PR—Nfld. w. to Alta., s. to Iowa and N.J.
- Tipula (Pterelachisus) sarta* Loew. See appendix.
- Tipula (Pterelachisus) trivittata* Say. Occasional; lakeside woods, once in swale with orchids, horsetail (*Equisetum*), wild ginger, etc., but usually in more upland woods among aspens, birches, spruce and pine. 20 June-13 July. PR—Nfld. w. to Iowa, s. to Kans., Tenn. and S.C. (with a subspecies recorded from Wyoming).
- Tipula (Beringotipula) borealis* Walker. Rare; one male, the prey of a lested damselfly, taken in deep grass beneath birches and aspens, near the Mississippi River near its source, on 20 July. PR—N.S. w. to Wis., s. to Kans. and S.C.
- Tipula (Beringotipula) helderbergensis* Alexander. Occasional in swamp-margin vegetation, particularly in bracken and other ferns, *Equisetum*, *Aralia* and other low plants. 27 June-13 July. PR—N.B. w. to Mich., s. to N.Y.
- Tipula (Beringotipula) latipennis* Loew. One

- of the commonest crane flies in the early-summer fauna. Common to abundant in the shaded grasses, ferns and leafy herbaceous plants (30 cm to 1 m high) of swamp borders, on hillsides and in upland woods, in both evergreen and mixed forest habitats; less common in forest ecotones near open areas. 24 June-20 July. PR—N.S. w. to Alta., s. to Wis., s. Mich. and N.J.
- Tipula (Beringotipula) resurgens* Walker. Uncommon; in low plants of swamp borders, especially among ferns and *Equisetum*. 1-13 July. PR—Nfld. w. to Alta., s. to Ind. and Md. Recorded in older literature as *Tipula grata* Loew.
- Tipula (Lunaticipula) dorsimacula* Walker. See appendix.
- Tipula (Lunaticipula) duplex* Walker. See appendix.
- Tipula (Lunaticipula) megaura* Doane. Rarely collected; two males and a female in deep grasses at edge of scrubby second-growth woods. 14 July. PR—Que. w. to Minn., s. to Iowa and Vt.
- Tipula (Lunaticipula) parshleyi* Alexander. Occasional; in grasses and herbs 40-60 cm high in flat, wooded area near swamp; also in deep grasses at edge of low, second-growth woods. 19 June and 11-14 July. PR—Nfld. w. to Alta., s. to Colo., s. Mich. and Mass.
- Tipula (Lunaticipula) valida* Loew. See appendix.
- Tipula (Lunaticipula) youngi* Alexander. Fairly common in ferns, *Aralia* and other vegetation of upland woods and slopes above swampy areas. Collected in ratio of 13 males to 1 female, yet over many days, suggesting the females are somehow elusive (i.e., that this was not a sampling of the early part of the emergence period). 24 June-15 July. PR—Nfld. n.w. to Alaska, s. to Alta., Wis. and N.Y.
- Liogma nodicornis* (Osten Sacken). Adults occasionally found locally in herbaceous vegetation and lower branches of trees in mixed forest; larvae occur in mosses such as *Mnium* found where adults were taken. 19-27 June. PR—Nfld. w. to Alta., s. to Ill. and Va.
- Limonia (Limonia) tristigma* (Osten Sacken). A mid-summer species taken only near the end of the period of this report, therefore rated as uncommon although it is generally an abundant, widespread species; collected from ferns near a swamp border, also from deep grass beneath birches and aspens. 19-20 July. PR—N.B. w. to Alta., s. to Ill. and N.C.
- Limonia (Metalimnobia) cinctipes* (Say). Uncommon; collected from deep shade beneath a boulder projecting from a bank, where it was resting together with *Dolichopeza* spp. 1 July. Two males and two females identified as this species, but smaller than usual and with atypical wing markings, were found on 27 June and 1, 15 and 19 July. Size variation in *L. cinctipes* is well known. This species is sometimes regarded as a North American race of the palearctic *Limonia annulus* (Meigen). PR—Nfld. w. to Alta., s. to Mo., Miss. and Fla.
- Limonia (Metalimnobia) fallax* (Johnson). Occasionally collected from shaded grasses, ferns, *Aralia*, *Equisetum*, *Aster*, etc., at edges of swamps and lakes. 20 and 27 June, 10 and 20 July. PR—N.J. w. to Mich., s. to Okla. and N.C.
- Limonia (Metalimnobia) solitaria* (Osten Sacken). Abundant in nearly all shaded habitats, particularly in luxuriant vegetation bordering swamps, but also spreading into the more upland woods; the commonest, most ubiquitous tipulid encountered in the region, taken throughout the period of this report. Not found in streamside vegetation along the Mississippi River in any of the collections made there. 19 June-19 July. PR—N.S. n.w. to Alaska, s. to Minn. and Mass.
- Limonia (Metalimnobia) triocellata* (Osten Sacken). Rare; only one male collected from shaded ferns and *Carex* at the edge of a swamp. 19 July. PR—N.S. w. to Alta., s. to Kans., Ill., Tenn. and Ga.
- Limonia (Discobola) annulata* (Linnaeus). Rare; a single male taken in herbaceous growth 30-70 cm high in low, flat woods

near the edge of a swamp. 11 July. PR—Nfld. w. to B.C., s. to Ore., Iowa, Tenn. and Va.; also widespread in Eurasia.

Limonia (Rhipidia) fidelis (Osten Sacken). Rare; a single female collected in low plants on slope above a swamp. 4 July. PR—N.S. w. to Alta., s. to Ore., Ill., Tenn. and Fla.

Limonia (Rhipidia) lecontei Alexander. See appendix.

Limonia (Dicranomyia) brevivena (Osten Sacken). See appendix.

Limonia (Dicranomyia) haeretica (Osten Sacken). Rare; one female found in luxuriant broad-leaved plants at the margin of a swamp, on 13 July. PR—Nfld. w. to Mich., s. to N.Y.

Limonia (Dicranomyia) immodesta (Osten Sacken). Numerous; taken at several localities in both the swamp-margin habitat and further up the slopes into the upland woods. 29 June-19 July. PR—N.S. w. to Alta., s. to Iowa and S.C.

Limonia (Dicranomyia) immodestoides Alexander. See appendix.

Limonia (Dicranomyia) liberta (Osten Sacken). See appendix.

Limonia (Dicranomyia) morioides (Osten Sacken). Rare; only one male found among ferns and horsetails (*Equisetum*) at the margin of a swamp. 27 June. PR—Nfld. n.w. to Alaska, s. to Colo., Mo. and N.C.

Limonia (Geranomyia) communis (Osten Sacken). Occasionally swept from deeply shaded lakeside and streamside grasses and from swamp borders. 25 June-16 July. PR—Nfld. w. to B.C., s. to Calif., La. and Fla. Note: this species has often been confused with *L. canadensis* (Westwood); the flies recorded here would key to *canadensis* in most current keys, e.g., that in Alexander, 1942.

Heliopsis (Heliopsis) flavipes (Macquart). Uncommon; in luxuriant broad-leaved vegetation at the edge of a swamp and spreading into drier woods on nearby slopes. 27 June-4 July. PR—N.S. w. to Alta., s. to Tex. and Fla.

Pedicia (Pedicia) albivitta Walker. Rare;

only two individuals taken, both in vegetation 70-90 cm high, in deep shade near small streams, at two localities but both on 21 June. PR—Nfld. w. to Man., s. to Mo. and S.C.

Pedicia (Tricyphona) inconstans (Osten Sacken). Rare during this collection period although usually a common species in most parts of its range; only one male taken about 50 cm above ground in deep grass beside the Mississippi River approximately 350 m north of its source. 20 July. PR—Nfld. w. to Minn., s. to Mo. and Ga.

Epiphragma (Epiphragma) fasciapennis (Say). Common, particularly in the more upland woods, on broad-leaved herbaceous plants 60-90 cm high (a habitat shared with *Limonia solitaria* and *Pilaria* spp.). 19 June-4 July. PR—Nfld. w. to Alta., s. to La. and Fla.

Austrolimnophila (Austrolimnophila) toxoneura (Osten Sacken). Occasional; in dense, low vegetation along swamp margins. 24 June-13 July. PR—Nfld. w. to Wis., s. to Tenn. and Va.

Pseudolimnophila (Pseudolimnophila) inornata (Osten Sacken). Common to abundant in nearly every shaded habitat, but especially near water. Although the larvae are aquatic, the adults freely move up the slopes into the upland woods. 19 June-15 July. PR—Nfld. w. to Wis., s. to Ind. and Md.

Pseudolimnophila (Pseudolimnophila) noveboracensis (Alexander). Abundant and taken in more separate collections than *P. inornata*, particularly near water but also spreading up the slopes to upland woods. 1-19 July. PR—N.S. w. to B.C., s. to Utah and S.C.

Limnophila (Phylidorea) adusta Osten Sacken. Uncommon; in woods near pond, in one instance, and in the *Carex*-filled bed of a dried forest pond in another. 29 June and 14 July. PR—Nfld. w. to Wis., s. to Ill. and N.C.

Limnophila (Phylidorea) platyphallus Alexander. Rare; only one male taken in shaded vegetation 30-60 cm high, at swamp margin on 16 July. PR—N.S.

- w. to Alta., s. to Mich. and Pa.
Limnophila (Phylidorea) similis Alexander.
 See appendix.
- Limnophila bryanti* Alexander. Rare; a single female taken by sweeping sedges under sparse woods of aspen and birch beside the Mississippi River where it is about 5 m wide, clear, with sand and boulder bottom. 30 June. PR—reported earlier only from Alberta.
- Limnophila poetica* Osten Sacken. Rare; only two males, both from dense undergrowth of wooded swamps. 27 June and 9 July. PR—Que. n.w. to Alaska, s. to B.C., Ill. and Mass.
- Shannonomyia lenta* (Osten Sacken). Occasional; in ferns and sedges at margins of swamps and in similar vegetation beside a small stream. 9-19 July. PR—Nfld. w. to Ill., s. to Tenn. and Ga., with a subspecies recorded from the Gaspé region of Quebec.
- Pilaria meridiana* (Staeger). See appendix.
- Pilaria recondita* (Osten Sacken). Abundant, especially on low, broad-leaved plants, in nearly every habitat and throughout the collecting period; absent only from all three collections made along the banks of the Mississippi River and one lake-shore collection (cf. *Limonia solitaria*). 19 June-19 July. PR—N.S. w. to Minn., s. to La. and Fla.
- Pilaria tenuipes* (Say). Uncommon; taken in leafy vegetation of a swamp margin on 1 July and in shaded, deep grass by the Mississippi River on 20 July. PR—N.B. w. to Wis., s. to Kans., Tex. and Fla.
- Hexatoma (Eriocera) cinerea* (Alexander). Rare; only two males taken in sedges in the shade of alder bushes at the edge of the Mississippi River about 13 km north of its source, on 30 June. PR—Que. w. to Ont., s. in mountains to e. Tenn. and S.C. This collection represents a westward extension of the range of some 1000 km (625-650 mi).
- Gnophomyia (Gnophomyia) tristissima* Osten Sacken. Numerous in shaded, leafy vegetation up to about 1 m high in swamp borders and more upland woods, also in sparse birch-aspen woods along the Mississippi River. 27 June-19 July. PR—Que. and Maine n.w. to N.W.T., s. to Tex. and Fla.
- Gonomyia (Idiocera) blanda* Osten Sacken. See appendix.
- Gonomyia (Gonomyia) subcinerea* Osten Sacken. Occasional, but possibly overlooked in some habitats; taken only along border of one swamp and on adjacent slopes, but on various dates from 24 June to 19 July. In general a common, widespread species. PR—Nfld. w. to B.C., s. to Wash., Utah, Kans. and Fla.
- Cheilotrichia (Empeda) stigmatica* (Osten Sacken). Rare; taken only once (a male), in the swamp-margin habitat, on 27 June. PR—Nfld. w. to S.D., s. to Tenn. and N.C.
- Erioptera (Symplecta) cana* (Walker). Rare in this series of collections, although this is one of the commonest tipulids in North America. Only one female found in hillside vegetation in forest of spruce, pine, birch and aspen. 27 June. Since this species is one of the first on the wing in spring, the first generation was probably waning by mid-June. PR—Nfld. w. to B.C. and throughout the U.S.
- Erioptera (Erioptera) chlorophylla* Osten Sacken. Occasional in leafy herbs of swamp margins and up adjacent slopes a short distance; also in shaded, swampy areas at the edges of lakes; appeared earlier in the season than the very similar *E. chlorophylloides*. 4-19 July. PR—N.S. w. to Wis., s. to Tenn. and Fla.
- Erioptera (Erioptera) chlorophylloides* Alexander. Occasional and generally in the same habitats as the preceding species, but also found in ferns and sedges at the source of the Mississippi River. 15-19 July. PR—Nfld. w. to Colo., s. to Tenn.
- Erioptera (Erioptera) septemtrionis* Osten Sacken. Rare; only two males and a female taken at light in western Hubbard County, near the eastern edge of Itasca State Park, on 7 July. PR—Nfld. w. to Wash., s. to Calif., Kans. and Fla.
- Erioptera (Erioptera) villosa* Osten Sacken. Numerous; taken among ferns, sedges

and leafy herbaceous plants of swamp borders and swampy areas at edges of lakes and ponds, but occasionally spreading up wooded slopes; found once in streamside sedges. 9-16 July. PR—Nfld. w. to Sask., s. to Utah, Colo. and N.Y.

Erioptera (Mesocyphona) caliptera Say. Like the preceding species, a generally common species, but rare in this locality during this particular season. Found in dense, leafy vegetation of a swamp border. 13 July. PR—Nfld. w. to Calif., s. into Centr. and S. Amer. and Fla. Recorded as *E. caloptera* in older literature.

Ormosia (Ormosia) manicata (Doane). Rare; one male found in luxuriant vegetation 50-70 cm high along the margin of a swamp. 4 July. PR—Nfld. w. to Wash., s. to Calif. and Pa.

Ormosia (Ormosia) megacera Alexander. Rare; two males collected from rank herbaceous growth at swamp margin. 13 July. PR—Que. and Nfld. s.w. to Pa. This is accordingly a new regional record, the nearest previous localities being approximately 1600 km (1000 mi) to the east.

Ormosia (Ormosia) monticola (Osten Sacken). Common in both low wooded areas such as swamp margins and stream banks and in upland woods, associated with low, leafy plants and deep grasses. 19 June-19 July. PR—N.B. w. to Mich., s. to N.C.

Molophilus (Molophilus) hirtipennis (Osten Sacken). Uncommon in shaded swamp-margin vegetation. 13-19 July. PR—Nfld. w. to Ont., s.w. to Ill., Tenn. and N.C.

Molophilus (Molophilus) novacaesariensis Alexander. Rare; one female only, identified (with some doubt) as this species by its wing venation and small size; from low vegetation of swamp border; found together with *M. hirtipennis*. 13 July. PR—N.J. w. to Ind., s. to Fla.; if this specimen is correctly identified it represents a new regional record.

PTYCHOPTERIDAE

Ptychoptera metallica Walker. Numerous; among grasses and broad-leaved herbs in unshaded lakeside seepage habitat with saturated sandy but humous soil; less often in grass-sedge microhabitats in swampy woods. 20 June-19 July. PR—widely scattered records from Ont., Minn., Alta. and Colo.

Ptychoptera quadrifasciata Say. Common in two localities, both grass-sedge habitats, one partially shaded, near the Mississippi River's source, the other in an unshaded swale near a smaller stream. 10-16 July. PR—Que. w. to Ill., s. to Fla. This species was recorded as *Ptychoptera rufocincta* Osten Sacken in much of the older literature.

Bittacomorpha clavipes (Fabricius). Common in grass-sedge habitats at edges of streams and lakes and around hillside seepage areas, also in rank herbaceous growth of swamp margins, usually in shade, but often in full sunlight. 25 June-19 July. PR—Nfld. w. to Man., s.w. to Ariz. and s. to Tex. and Fla.

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Appendix

After the above was in press, a collection of crane flies from the Lake Itasca region became available from the University of Minnesota, through the cooperation of Dr. Edwin F. Cook. This collection, spanning the years 1914 to 1964, includes 12 species that I did not find. Some of these species have a flight season that normally ends before mid-June; others were taken in early summer but for some reason I overlooked them during the weeks of my own collecting. Many were collected in light traps, a method I did not use. With one exception, the University of Minnesota specimens are not accompanied by habitat data. In some instances the dates of collection add to those recorded above.

Names of the twelve additional species have been inserted at the appropriate places in the basic list, but details concerning them appear below. For most other species in the University of Minnesota collection, only the dates of collection (for all years together) are given.

Ctenophora (Ctenophora) apicata. 9 and 16 July.
Ctenophora (Tanyptera) dorsalis Walker. Rare; one male, two females, all of the *topazina* form with yellowish wings. 25 June and 17 July. PR—Nfld. w. to Wis., s. to Ill., Ohio and N.C.
Nephrotoma alterna. 10 July.
Nephrotoma breviorcornis. 3 July.
Nephrotoma ferruginea. 16 June-15 July, 21 Aug.
Nephrotoma gracilicornis. 17 June-9 July, at light.
Nephrotoma lugens. 14-30 June, 13 July, 17 Aug.
Dolichopeza (Oropeza) walleyi. 17 July.
Tipula (Nippotipula) abdominalis. 1 Aug. (cf. larval record above).
Tipula (Yamatotipula) sulphurea. 17-29 June, 14 Aug.
Tipula (Yamatotipula) tephrocephala. 14 June-1 July.
Tipula (Yamatotipula) tricolor. 12-15 July.
Tipula (Angarotipula) illustris. 5 and 15 July.
Tipula (Pterelachisus) angulata. 16 June, 4 July.
Tipula (Pterelachisus) entomophthorae. 28 May.
Tipula (Pterelachisus) senega. 25 June.
Tipula (Pterelachisus) sarta Loew. Probably occasional; 29 May, 9 June-13 July. PR—Labr. w. to Alta., s. to Minn., Mich. and N.Y.

Tipula (Pterelachisus) trivittata. 11-18 June.
Tipula (Beringotipula) helderbergensis. 18 June, 14 July.
Tipula (Beringotipula) latipennis. 17 June, 10-15 July.
Tipula (Beringotipula) resurgens. 24 June, 7-29 July.
Tipula (Lunatipula) mcgaura Alexander. 12 July.
Tipula (Lunatipula) dorsimacula Walker. Probably numerous in late spring; 22 May-14 June. PR—N.S. w. to B.C., s. to Calif., Colo., Kans. and N.J.
Tipula (Lunatipula) duplex Walker. Rare; a single female, taken on 9 July. PR—N.S. w. to Mich., sw. to Kans. and s. to Tenn. and n. Fla.
Tipula (Lunatipula) parshleyi. 14 June-8 July.
Tipula (Lunatipula) valida Loew. Rare; a single male, taken 17 June. PR—Nfld. w. to Minn., s. to Ill. and N.C.
Tipula (Lunatipula) youngi. 18 and 29 June.
Limonia (Metalimnobia) cinetipes. 27 July. One female reared from the fungus *Polyporus dryophilus*; this is a small, atypically marked individual, as described above under *L. cinetipes*.
Limonia (Metalimnobia) solitaria. 25 June.
Limonia (Metalimnobia) triocellata. 28 July.
Limonia (Rhipidia) lecontei Alexander. Rare; one female, taken at light trap, 2 July. PR—Nfld. nw. to Alaska, s. to Calif., Kans. and Va. In much of the older literature, this species has been identified as *L. (Rh.) maculata* Meigen.
Limonia (Dicranomyia) brevipena (Osten Sacken). Four females taken at light, all on 9 July. PR—Nfld. w. to Ore., s. to Fla.
Limonia (Dicranomyia) haeretica. 9 July.
Limonia (Dicranomyia) immodestoides Alexander. Probably locally common; 23 individuals, all females and all taken at light. 14-17 June, 2-9 July. PR—Nfld. w. to Ore., s. to Kans. and Ind.
Limonia (Dicranomyia) liberta (Osten Sacken). This species should be common in the Lake Itasca region; however, I did not find it, and the University of Minnesota collection contains only one male, one female, from light trap, 27 June. PR—Nfld. w. to Man., s. to Okla. and Fla.
Limonia (Geranomyia) communis. 13 June, 2 July, 2 and 10 Aug.
Helius (Helius) flavipes. 5 July, at light.
Epiphragma (Epiphragma) juscipennis. 25 June.
Pseudolimnophila (Pseudolimnophila) inornata. 14 June-11 July.
Pseudolimnophila (Pseudolimnophila) noveboracensis. 10 Aug.
Limnophila (Phylidorea) similis Alexander. Rare; one male, one female identified as this species but with some doubt. The gonapophyses are as shown for *similis* by Alexander (1942: 399, fig. 1), but the aedeagus is about as long as the gonapophyses, its two apophyses not divergent but approximately paralleling the aedeagus; outer dististyle nearest that of *L. fratria* O.S. PR—Que., Ont., N.Y. and Mass. The range is thus extended westward by 1000 km (625 mi) or more.

* These two references not cited in text but used as sources of locality data.

Shannonomyia lenta. 21 June.

Pilaria meridiana (Staeger). One female, 7 July. PR
—Maine w. to Ore., s. to Colo.; also in Eurasia.
This species has often been recorded as *P. osborni* Alexander.

Pilaria recondita. 13-21 July.

Gnophomyia (*Gnophomyia*) *tristissima*. 13 June, in light trap.

Gonomyia (*Idiocera*) *blanda* Osten Sacken. Apparently numerous locally; five males, 12 females taken at light, 5 and 19 July. PR—N.S. w. to Alta., s. to Mo. and Fla.

Gonomyia (*Gonomyia*) *subcinerea*. 9 July, at light.

Erioptera (*Symplecta*) *cana*. 28 May, 14-24 June, 2-10 July.

Erioptera (*Erioptera*) *chlorophylloides*. 11 July (one male); eight females of the *chlorophylla* group, 2-8 July, could belong to this species or to *chlorophylla*.

Erioptera (*Erioptera*) *septentrionis*. 5-14 June, most taken at light.

Erioptera (*Erioptera*) *villosa*. 6-8 July, at light.

Erioptera (*Mesocyphona*) *caliptera*. 21 June.

Molophilus (*Molophilus*) *hirtipennis*. 30 June.

Ptychoptera metallica. 11 Aug.